

# the Citrus Industry

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DR. A. E. CAMP

DR. A. F. CAMP  
Vice-Director of the Florida Citrus Experiment Station, is pictured above while on an inspection tour of citrus groves in Bermuda. Dr. Camp went to Bermuda at the invitation of the Bermuda Citrus Growers' Association to inspect local groves and offer advice on citrus culture.

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# One Year Of... Florida Citrus Mutual Service

Just one year ago, the story of the early struggles in organizing Florida Citrus Mutual was presented to you. That story told of the unselfish labors of many people connected with citrus Florida to bring into existence an organization through which order could be brought to a sadly demoralized industry.

There was presented to you at that time a list of some of the purposes and powers outlined in the Charter and By-Laws. These were very wide and varied in their scope. They provided for many of those activities essential to the proper sale and distribution of an agricultural product, but emphasis was placed upon the fact that there was no intention on the part of the Board of Directors or Management of Mutual to exercise any of those powers that conflict with services being efficiently performed by other industry agencies such as the Florida Citrus Commission, the Marketing Agreement Committees, the Growers and Shippers League, and various research agencies.

There was recognition, however, that Mutual should employ all of its authority to establish a pattern of orderly marketing and distribution of the citrus crops of Florida so that all elements in the industry and those allied with it might be assured of their fair share in a profitable business. So, when Mutual started into active operation last September, it had the groundwork for a plan of operation to accomplish the above objectives.

With the blueprints in hand, it became necessary for an operating organization to be formed. Starting with a skeleton crew, we have gradually perfected an efficient smooth-working organization that is performing excellent service to the citrus people of Florida.

Policy matters are in the hands of the Board of Directors. They are your own friends and neighbors. The members of Mutual selected them by exercising their right through the democratic process of the ballot box. By their selection, a very heavy responsibility was placed upon their shoulders. They have carried this responsibil-

ADDRESS AT 6TH ANNUAL GULF CITRUS GROWERS INSTITUTE,  
BROOKSVILLE, FLA., APRIL  
28, 1950, BY  
ALDEN M. DRURY

lity well, and are discharging their obligations to you and the citrus industry of Florida by many long hours of unselfish labor on your behalf. They have not received one penny of compensation for their services. Their compensation comes in the realization of a job well done. I am proud to be identified with an organization having such an outstanding group of gentlemen as its policy makers. Early in June, members will again have the privilege of selecting a Board of Directors to determine its policies and guide Mutual through another year.

Growers, packers, processors, and the trade have been watching the growth and development of Florida Citrus Mutual. They are all familiar with the need for an organization necessary to build confidence and make the growing and handling of Florida citrus a stable and profitable industry. They all believe that with the formation of Mutual there is at long last a plan and program under which there will be orderly distribution and citrus prices will be stabilized.

During the past few months, Mutual has had several opportunities to prove its value to the industry. Its first major action was taken last November in the face of a rapidly-declining orange market when the Board of Directors set minimum floor prices for oranges to go to the processing plants and for fresh fruit shipment. Such action stopped the decline and reversed the trend, and prices continued on an upward climb throughout the balance of the early and midseason variety harvest period.

Now as we get into the swing of the Valencia harvest, it is proper to look at the marketing picture again. We have reports from California that shipments of oranges from that State will not be heavy until late in June. We have our own Florida crop estimates

which indicate a crop that can be moved through normal and processing outlets, without overloading either, before competition gets too heavy from California. Against this optimistic backdrop, however, the industry suffered a sudden attack of jitters, and prices fell away from those in effect as the Valencia season opened. Again, Mutual stepped in and set floor prices, and again, the decline has stopped and confidence has been restored.

We have the fresh fruit shippers working closely with the Mutual office in a daily exchange of information that permits much better control of shipments to the markets than has been the case heretofore. Those daily reports indicate how many cars have been sold fob, the price at which they have been sold, the number of cars going to each of the terminal markets for sale at auction, the number of cars shipped on consignment to markets in the north, and the quantity of fruit that is rolling unsold. In addition to the above, the daily market report carries the record of the total number of boxes utilized by the various processing outlets and the price paid by the processors for such fruit delivered at their unloading platform.

To complete the picture, there is a daily report from New York, Chicago, Boston, Cleveland, Detroit, and Philadelphia where Mutual maintains contact men who give to Mutual reports as to prices, demand, weather conditions, quality of fruit and the general trend of the market on which the shipper can rely.

There also has been prepared a tentative schedule of shipments that will so space the movement of the Valencia crop that it can be harvested and marketed during its normal useful life.

Such plans are new to the Florida citrus industry. They are gratifying to those of us who have had a small part in developing this program, and they are proving beneficial to the entire industry through building confidence in the stability of Florida citrus.

(Continued on page 9)

# Perfection Is A Target Worth Shooting At....

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And while it is probable that few citrus groves will reach this 100 per cent mark, still it is possible for any grower to bring his grove into a state of superb health and its productiveness up to a standard which will be both satisfying and profitable.

Were it not for insects and weather it is entirely possible that complete perfection might be reached . . . and while all of us want to see our groves in the finest condition possible, the real measure of our success in this respect is to be found in the net profit derived from our grove operations.

The fact that there are a great many growers throughout Florida's citrus belt who will vouch for the large crops and fine quality which they get from their groves as the result of using Florida Favorite Fertilizers is as pleasing to us as it is to our customers.

We feel that the staff of our manufacturing personnel, our sales force and our field service men are as capable as any group can be . . . and all of us are vitally concerned in seeing that the fine reputation which Florida Favorite Fertilizers have made throughout the years is not only maintained but improved.

So when you are looking for the best means of improving your groves and of increasing your crops we suggest that you consider Florida Favorite Fertilizers.

Remembering that fertilizer ordered  
from us goes direct to your groves  
in our own fleet of delivery trucks.

**Florida**  **Favorite**  
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Old Tampa Road

Lakeland, Florida



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## Planning Spray Program For The Summer Of 1950

June 1 marks the beginning of that period when sprays for scale control will be applied. The problem of what insecticides to use and when to use it is complicated not only by the presence of insects other than scales, but also by the effect of the material on fruit quality and the comparative cost. The paragraphs below will discuss many of the situations which exist along with some suggestions and alternatives which may be followed.

### Purple Mites

The fall of 1949 and the spring of 1950 have produced exceptionally heavy infestations of purple mites. This has been one of the worst, if not the worst, purple mite year in the history of the Florida citrus industry. Probably the most important factor in purple mite increases has been weather. It may be recalled that in November of last year the authors suggested that the type of weather then present was very desirable for purple mites and that heavy infestations might be expected to ensue. The cool nights and the warm days experienced during November were most satisfactory for the development of large numbers of purple mites. This same general type of weather continued through April. Thus, during the past six months weather con-

JAMES T. GRIFFITHS AND W. L. THOMPSON, U. OF F., CITRUS EXPERIMENT STATION

ditions have been very satisfactory for purple mite development. It is not surprising, therefore, that infestations have been unusually severe. The winter has been a dry one and dry weather is conducive to purple mite injury. It is probable that dry weather in itself does not cause increased numbers of purple mites but rather lends the trees to greater susceptibility to injury.

Parathion sprays have been credited by many people as causing large numbers of purple mites to follow the spray application. There is good evidence to prove that parathion sprays may be followed by excessive numbers of purple mites. However, the general picture over the State today shows large numbers of purple mites both where parathion has been used and where it has not been used. It seems impossible at the present time to conclude that the use of parathion during the past year has had any measurable effect upon purple mite infestations in most groves this spring.

Another factor of considerable importance is the failure to time

the applications of DN properly. For a number of years it has been strongly recommended that DN applications be made both in the fall of the year and again during the late dormant period. Where this practice was followed, purple mite injury has been at a minimum, and in most of these groves at the present time very few purple mites will be found. Many growers have adhered to a policy of using DN only during the dormant period. During the past winter season this one application was often applied only after a severe infestation of purple mites already existed. While the spray did do away with most of the mites present at that time, sufficient numbers were left so that they increased to large proportions by late April and May. This points up the fact that DN, to be completely effective, must be properly used. It is strongly recommended that growers plan to apply DN during late October or November this fall, and to follow this with a second application during late January or early February. This will avoid the many anxious calls which we have received during the past several weeks regarding what to do about purple mites.

The recommendations for control at this season of the year have to

revolve around the use of oil spray. DN cannot be used safely during hot weather and the only insecticide available is oil. Irrigation will help somewhat in that trees which are not suffering for moisture will be better able to withstand the rigors of a purple mite infestation. There will be some further discussion of the use of oil versus parathion in connection with purple mites in the paragraphs which follow.

#### Scale Insects

In planning a scale control program for this summer, some attention should be paid to what has happened to purple and red scale infestations during the past six months. In a general way, the scale infestations in the fall of 1949 were at the lowest point they have reached in a number of years. Thus, the winter period was entered with small numbers of scales in most groves. This situation continued up until about February when there were large increases in the number of both red and purple scales until at the present time the scale infestations are threatening in many groves, and in some, heavy infestations are present. The increase has been sufficient in many groves to change the situation to one which is definitely threatening at the present time. It is well for most growers to realize that scale insects are present in considerable numbers at the present time. This may be true even though they may see very few scales on new foliage, and severe infestations can develop if proper control measures are not undertaken. There are a number of factors to be considered in planning the scale control program and these will be listed and discussed below.

#### The Insecticide to be Used

**Oil**—The insecticides are available for scale control. The first one to be mentioned is oil emulsion which is, of course, the old standby in Florida. Oil will be used in most groves again this year. It should be applied at a 1.3 percent actual oil in an emulsion and extreme care should be taken to completely cover all wood and foliage if good control is to be obtained. Several things must be considered if oil is to be used. Soil moisture must be adequate, and oil should not be used if the trees are suffering at all from drought.

The fruit size is also of importance. Oil sprays applied to

fruit between the sizes of 3/4 inch and 1-1/4 inches in diameter are very apt to produce an injury known as oil blotch. This is quite unsightly and renders the fruit unshippable. Therefore, oil sprays should not be applied until after such time as the fruit has attained 1-1/4 inches in diameter.

The presence of purple mites in the grove may make it desirable to use oil for scale control. At the same time that scale control is accomplished, purple mites may be killed, thereby controlling two insects with one spray application. Complications arising from the presence of rust mites at the time that the oil spray is applied will be discussed later under the subject of rust mites.

**Parathion**—Parathion may be substituted for oil. Experience has shown that where parathion is used at the rate of 2 pounds per 100 gallons of spray that scale control is as good or better than that experienced with oil emulsion. Parathion presents some advantages over oil. In addition to controlling scale insects, it will control mealybugs and if combined with sulfur, will control rust mites as well. It may be used after the first of August without affecting fruit color or solids. Parathion should not be depended upon to control purple mites. It kills the active mites but does not kill the eggs, and the spray residue does not remain toxic long enough to kill the young mites as they hatch.

Another factor which growers should consider is the build up of soft brown scale following the use of parathion. Experience both in California and in Florida indicates that soft brown scale may be expected to build up following the use of parathion applications. Those growers who have used parathion more than once in their groves during the past year should make a rather careful examination for this insect.

Several cases of illness due to parathion have been reported to the Experiment Station during the past two months. None of these cases have been particularly severe, but they point up the fact that people are getting sick from the use of parathion. Along with the reports that some people are sick have come reports from other growers that their labor, and in some cases the grower himself, have decided that parathion is not a deadly poison and that it need

not be handled as carefully as directions have indicated. The stand of the Experiment Station has not changed at all as regards the use of parathion. People have been sick, other people may die from the use of parathion if the proper precautions are not taken. There is considerable evidence to show that the prolonged use of parathion by individuals is an added hazard and where possible spray hands should not be expected to handle parathion for more than one to two weeks at a time and then should be allowed a break between spray periods. This may be done by either rotating crews or by discontinuing spraying altogether for a matter of a week to ten days. Parathion does not affect color or solids and a delay of 10 days will not affect scale control. This is important to the well-being of the men handling parathion and should be considered by growers in planning their spray programs. **Above all, because no illness has resulted so far in a given operation, precautions should not be relaxed and extreme care should be continued.**

#### Timing of the Scale Sprays

Two things should be considered in the timing of sprays for scale control. One is the season of the year and the second is the age of the scales which are present. Checks on crawlers and egg deposition of both Florida red and purple scales during the spring of 1950 have indicated that both species were laying eggs in large numbers during the latter part of April. Where possible, sprays for scale control should not be applied during a time when maximum egg deposition is going on. It is anticipated that this period will occur again around June 20 to June 25 for red scale and June 25 to 30 for purple scale. In general, the scale will be more easily killed during early July than during June so far as age of scale is concerned since both species will be present in large numbers as young scale during the first two or three weeks of July. Early June will not be as satisfactory as July, but will be better than late June. Where possible, this factor should be considered in planning scale control programs.

The other factor to be considered in timing is the season of the year. During the past years scale control has generally been more satisfactory when sprays were

(Continued on page 16)

# Gel Formation In Frozen Citrus Concentrates Thawed And Stored At 40° F.

The quality of frozen citrus concentrates will be greatly lowered if storage temperatures during transportation and in the frozen food cabinets in stores and homes are not sufficiently low to keep the citrus concentrates frozen. Desirable qualities of a frozen citrus concentrate are that it be free from lumps and that on reconstitution the juice will retain the physical appearance of fresh juice. It has been noted that gel-like particles formed in some samples of frozen grapefruit concentrates that had been stored at usual household refrigerator temperatures for about one week, and prolonged storage resulted in the formation of a solid gel. Curl et al. (5) found that orange concentrates which were unpasteurized but benzoated became lumpy when stored at temperatures from 40° to 120° F.

The principal object of this investigation was to determine the cause of gelation in unpasteurized citrus concentrates. In establishing the cause of gelation, data were secured in reference to the relation between the degree of gelation and methoxyl content of the pectin, pectase activity, and rate of separation of reconstituted citrus concentrates.

#### Experimental Procedure

**Collection and Storage of Samples:**—Seven packs of frozen citrus concentrates processed during the 1948-49 season at the Citrus Experiment Station were used for this investigation. Information on these packs of unpasteurized frozen concentrates is presented in Table 1.

Samples of the concentrates were removed from storage at 0° F. and placed in the 40° F. storage room. These samples were taken for examination periodically as shown in Tables 2 and 3.

**Methods of Analyses:**—An alcohol precipitate was prepared from each sample of concentrate, dried, redissolved in distilled water and clarified for the determinations of

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AT MEETING OF FLORIDA STATE  
HORTICULTURAL SOCIETY

calcium pectate and the methoxyl content of the pectin. The pectic content was determined by the Carre and Haynes (3) calcium pectate method. The methoxyl content of the pectin was determined by saponification and express on a calcium pectate basis.

The pectase activity in the citrus

and per gram of total solids in the concentrate.

The rate of separation of the insoluble solids was determined on the reconstituted juices prepared by adding three parts of water to one part of frozen concentrate. The amount of separation was determined by placing 100 ml. of the reconstituted juice in a 100 ml. graduated cylinder and noting, after fifteen minutes, the amount of liquid free of pulp.

**Experimental Results and Discussion**  
Processors of frozen citrus concentrates in Florida for the past

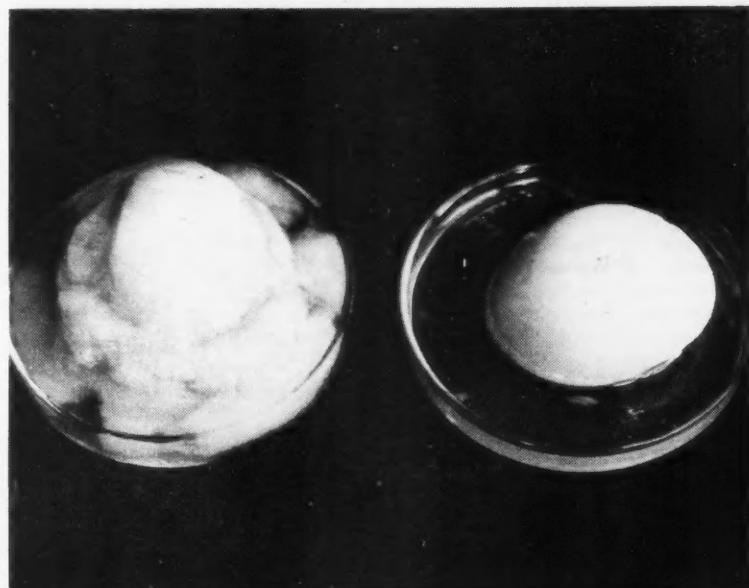


Fig. 1.—Gelation of frozen citrus concentrates caused by low methoxyl pectin produced during storage by the pectase enzyme.

Left—Orange concentrate—sample 4—semi-gel.

Right—Grapefruit concentrate—sample 1—solid gel.

concentrates was determined by the method of Kertesz (7), which he used in working with tomato juices. Pectase activity is considerably greater (approximately 10 to 20 times) in tomato products as compared with that found in citrus juices. The pectase activity was expressed in units per milliliters

few years have been using the process of MacDowell et al. (9). This juice may or may not be pasteurized. Since frozen citrus concentrates produced in Florida are unpasteurized, any pectic enzymes present have not been inactivated. Pectase, which demethylates pectin is also known as pectin-methoxylase

and pectin-esterase. A partially demethylated pectin will combine with the calcium present to form calcium pectinate, which under pro-

cessing is stored for 18 days at 40° F.; however, sample 4, which had a pectin with a methoxyl content of 6.53 percent, when stored for

is just on the border of the pH gelation range. Baker and Goodwin (2) discussed pH along with other optimum conditions for gel formation with low methoxyl pectins.

**Relationship of Pectase Activity to Gelation:**—A greater degree of gelation was found in those concentrates having the higher pectase activity. In Table 4 is presented the pectase activity in the citrus concentrates studied and the degree of gelation after 30 and 60 days storage at 40° F.

Data in Table 5 show the pectase activity in orange concentrates of varying solids content, which were prepared from the same juice and stored at 0° F. From these results pectase activity is indicated to be a function of concentration, being less active at 23.6° and 59.2° Brix and most active at 41° Brix.

Cotten et al. (4) found a similar relationship between degrees Brix and clarification rates of juices reconstituted from orange concentrates. Clarification in this case was undoubtedly caused by the pectic enzyme activity.

**Relationship of Gelation to the Separation of Reconstituted Juices:**—The data presented in Tables 2 and 3 show that as gel formation

Table 1. Frozen Citrus Concentrates Stored at 40° F.

Sample	Processed	Type	Variety	Refractometer—28° C.	pH
1	3-15-49	Grapefruit	Duncan	38.1	3.2
2	4-20-49	Grapefruit	Marsh Seedless	38.3	3.5
3	4-21-49	Grapefruit	Duncan (Late Bloom)	38.5	2.9
4	11-17-48	Orange	Hamlin	43.4	3.5
5	4- 5-49	Orange	Valencia	42.0	3.5
6	5- 5-49	Orange	Valencia	42.0	3.7
7	2- 8-49	Tangerine	Dancy	42.5	4.1

Table 2. Physical and Chemical Properties of Frozen Grapefruit Concentrate stored at 40° F.

Days Stored	Sample 1				
	0	6	12	18	24
Degree of Gelation	None	Slight	Semi-gel	Solid	Solid
Separation in 15 minutes—%	40	49	48	50	58
Calcium Pectate—%	0.16	0.15	0.15	0.10	0.12
Methoxyl Content of Pectin—%	4.67	4.46	4.33	3.99	3.41
Sample 2					
Degree of Gelation	None	None	Slight	Slight	Slight
Separation in 15 Minutes—%	0	28	28	30	40
Calcium Pectate—%	0.08	0.12	0.08	0.06	0.09
Methoxyl Content of Pectin—%	5.96	5.60	4.83	4.28	3.54
Sample 3					
Degree of Gelation	None	None	None	Slight	Slight
Separation in 15 Minutes—%	0	0	0	2	3
Calcium Pectate—%	0.10	0.13	0.13	0.14	0.15
Methoxyl Content of Pectin—%	7.97	7.20	7.09	7.02	6.87

per hydrogen ion concentration will form a gel. The firmness and amount of gel formed depends on the pH and the quantities of low methoxyl pectin, calcium and soluble solids present (1) (2).

**Degree of Gelation:**—The degree of gelation was expressed as none, slight, semi-gel, and solid gel. A slight gel is one where lumpy particles are present in the concentrate. A semi-gel and a solid gel are shown in Fig. 1. Grapefruit concentrate, sample 1, and orange concentrate, sample 4, showed gelation at the end of six days' storage at 40° F. The tangerine concentrate, sample 7, was the only one which showed no gelation after 60 days of storage at 40° F. Results shown in Table 4 indicated that in the case of orange concentrates, the degree of gelation increased on prolonged storage at 40° F.

**Relationship of Low Methoxyl Pectin to Gelation:**—The factor found to have the most influence on gelation in the frozen citrus concentrates was the presence of low methoxyl pectin. As shown in Tables 2 and 3, as the storage time was increased, the methoxyl content of pectin decreased and gelation increased. However, gelation was not always accompanied by demethylation. For example, orange concentrate, sample 6, showed a pectin with 5.31 percent methoxyl content but no gelation after

six days at 40° F. showed slight gelation. The major difference between these two samples was pH. The former had a pH of 3.7 which is out of the gelation range, while the latter had a pH of 3.5 which

Table 3. Physical and Chemical Properties of Frozen Orange Concentrate stored at 40° F.

Days Stored	Sample 4				
	0	6	12	18	30
Degree of Gelation	None	Slight	—	Slight	Semi-gel
Separation in 15 Minutes—%	12	20	—	21	25
Calcium Pectate—%	0.16	0.14	—	0.13	0.16
Methoxyl Content of Pectin—%	6.81	6.53	—	6.11	5.87
Sample 5					
Degree of Gelation	None	—	Slight	Slight	Slight
Separation in 15 Minutes—%	0	3	10	18	25
Calcium Pectate—%	0.15	—	—	0.08	0.12
Methoxyl Content of Pectin—%	6.73	—	—	5.03	4.63
Sample 6					
Degree of Gelation	None	—	None	None	Slight
Separation in 15 Minutes—%	0	2	9	16	25
Calcium Pectate—%	0.14	—	—	0.11	0.09
Methoxyl Content of Pectin—%	6.53	—	—	5.31	4.56

Table 4. Pectase Activity and Gelation in Frozen Citrus Concentrates

Sample	Type	Pectase Units	Degree of Gelation at 40° F.	Storage
1*	Grapefruit	2.2	5.0	30 Days
2	Grapefruit	1.6	3.6	Solid gel
3	Grapefruit	0.8	1.9	Semi-gel
4	Orange	3.5	6.7	Slight gel
5	Orange	2.8	5.7	Semi-gel
6	Orange	3.6	7.3	Slight gel
7	Tangerine	0.1	0.2	None

\* 5 ml. of each concentrate used.

Table 5. Relation of °Brix of Frozen Orange Concentrate to Pectase Activity

°Brix at 28° C.	Per ml.	Pectase Units	Per g. solids
23.6	0.7	—	2.6
33.2	1.6	—	4.1
41.0	2.5	—	5.1
50.4	2.6	—	4.2
59.2	2.1	—	2.7

## Lower Citrus Rates Proposed

appeared and increased with storage, the rate of separation increased. Those samples which showed no gelation or only slight gelation and which had higher methylated pectins definitely retained a colloidal cloud after the pulp separated, and this cloud became clearer as gelation increased with storage time. The two samples that formed gels, shown in Fig. 1, were very unstable juices when reconstituted and a water clear liquid resulted upon separation. Therefore the pectin in a frozen concentrate should be protected from de-esterification and degradation, if a stabilized reconstituted juice is desired.

**Inactivation of Pectic Enzymes.**—Very few studies have been reported on the activity of pectic enzymes in citrus juices, especially as to the relative rates of heat inactivation. Kertesz (8) who studied the pectase activity in tomato juice reported that the enzyme can be inactivated at 176° F. for 45 seconds. Joslyn and Sedky (6) reported that the inactivation, based on clarification studies, of pectic enzymes in orange juice, pH 4, was accomplished by heating either for nine minutes at 140° F. or one minute at 212° F. The complete inactivation of the pectic enzymes may not be necessary since the data showed that when the activity in the concentrate was approximately 2 units only slight gelation occurred in sixty days when it was held at 40° F. Further studies are being conducted on the inactivation of the enzymes present in citrus juices.

### Summary

The data presented verify that the presence of low methoxyl pectin, which resulted from the activity of the enzyme pectase is the cause of gelation in frozen citrus concentrates during storage at 40° F.

In all of the reconstituted juices the rate of separation increased as the degree of gelation in frozen citrus concentrates increased.

### Literature Cited

1. Baker, G. L. and Goodwin, M. W. Fruit jellies—XI. Demethylation of pectin and its effect upon jelling properties. *Del. Agr. Exp. Sta. Bul.* 234. 1941.
2. Baker, G. L. and Goodwin, M. W. Fruit jellies—XII. Effect of methyl ester content of pectinates upon gel characteristics at different concentrations of sugar. *Del. Agr. Exp. Sta. Bul.* 245. 1944.
3. Carre, M. H. and Haynes, D. The estimation of pectin as calcium pectate and the application of this method to the determination of the soluble pectin in apples. *Biochem. Jour.* 16: 60-69. 1922.
4. Cotten, R. H., Roy, W. R., Brokaw, C. H., McDuff, O. R. and Schoeder, A. L. Storage studies on frozen orange concentrates. *Proc. Fla. State Hort. Soc.* 39-49. 1947.
5. Curl, A. L., Moore, E. L., Wiederhold, E. and Veldhuis, M. K. Concentrated orange juice storage studies with particular reference to the development of swells. *Fruit Products Jour.* 26: 101-109; 121. 1946.
6. Joslyn, M. A. and Sedky, A. Effect of heating on the clearing of citrus juices. *Food Research* 5: 223-232. 1940.
7. Kertesz, Z. I. Pectic Enzymes. The determination of pectin methoxylase activity. *Jour. Bio. Chem.* 121: 589-598. 1937.
8. Kertesz, Z. I. Pectic Enzymes III. Heat inactivation of tomato pectin-methoxylase (Pectase). *Food Research* 4: 113-116. 1938.
9. MacDowell, L. G., Moore, E. L., Atkins, C. D. Method of preparing full flavored fruit juice concentrate. (to the United States of America, as represented by the Secy. of Agr.), U. S. 2,453,109. November 9, 1948.

The Florida East Coast Railway Company and the Seaboard Air Line Railroad Company submitted a proposal to the Southern Freight Association, May 17th, for a substantial reduction in rates on citrus fruit from all origins in Florida to destinations in the District of Columbia, Illinois, Indiana, Maryland, Michigan, Missouri, New Jersey, New York, Ohio, Pennsylvania, Virginia, West Virginia and Wisconsin. The proposal does not include Philadelphia, New York City or the New England states as that territory is to be given further consideration at a later date.

The proposal as previously advised establishes the carload minimum weight on oranges at 48,000 pounds, grapefruit 43,000 pounds and tangerines 38,475 pounds, when in cars 33 feet and over in length, and when in cars under 33 feet in length 46,000 lbs., 41,000 lbs., and 37,360 lbs., respectively.

The proposal is exactly as pre-

viously reported, in other words, the rate to Chicago will reflect a per box charge of 90 cents, which is 10 cents less than the current truck rate and this new rate will not include refrigeration. Specifically the rate per 100 pounds to Chicago from Lake Wales will be 97 cents on oranges, 108 cents on grapefruit and \$1.00 on tangerines. To Detroit, Mich., the rate per 100 lbs., from Lake Wales will be, on oranges 113 cents, on grapefruit 127 cents and on tangerines 117 cents, which will reflect a per package charge of 105 cents or ten cents less than the going truck rate of 115 cents. To Pittsburgh, Pa., the rate will be exactly the same as to Chicago. The rate per 100 lbs. to Baltimore, Md., in the Wirebound box will be, on oranges 81 cents, on grapefruit 90 cents and on tangerines 83 cents. In the Nailed box the rate per 100 lbs. will be, on oranges 75 cents, grapefruit 82 cents and tangerines 75 cents. These rates will reflect a per package charge of 75 cents which is 10 cents less than the current truck charges and will not include free refrigeration.

### ONE YEAR OF FLORIDA CITRUS MUTUAL SERVICE

(Continued from page 3)

Mutual is constantly working to perfect its method of operation and to further improve the service it can render to those who look to the Florida citrus industry for their livelihood.

The record so far has been one of which all of us can well be proud. The going has been rough at times. The going may be rough at times in the future. But, Mutual, by its action in November resulting in addition of many millions of dollars to the citrus economy of the State and by its action last week, has fully justified its existence. It has set a pattern that is the envy of agricultural groups from coast to coast. There is no question of its ability to continue and to succeed in its avowed purpose of stabilization of the citrus industry so long as it continues to have the loyal support of its grower-members, its contract packers and processors, and the trade.

Mutual has demonstrated that teamwork wins!

# The Citrus Industry

with which is merged The Citrus Leaf  
Exclusive Publication of the Citrus Growers and Shippers

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## FLORIDA CITRUS COMMISSION— FLORIDA CITRUS MUTUAL

Both the Florida Citrus Commission and the Florida Citrus Mutual, two great organizations serving the citrus industry of Florida, are undergoing a sort of face lifting operation as this issue of The Citrus Industry goes to press. In fact, the Florida Citrus Commission has already undergone the process.

Six members of the Florida Citrus Commission have come to the end of their terms, and another vacancy was caused by the recent death of Dodge Taylor, chairman of the Commission. Governor Warren has named four grower-shipper members, three to succeed those whose terms expire and one to fill the unexpired term of Dodge Taylor. Three grower-members have been named by the Governor to take the place of retiring grower members. These grower members were selected by the Governor from a list of nominees chosen by the growers of Districts 2, 4 and 6.

The newly appointed grower-shipper members are: Warren Zeuch, Vero Beach; Harry Tooke, Sanford; Nash Le Gette, Leesburg. To fill the unexpired term of Dodge Taylor, Frank Roper, Winter Garden, has been named. The grower members named by the Governor are: For District No. 2, W. F. Robinson, Leesburg; District 4, Frank Chase, Windermere; District 6, Robert Wooten, Lake Placid.

Meanwhile, members of Florida Citrus Mutual at district meetings are selecting members of the board of directors, and while it is expected that many of the present directors will be retained, it is not improbable that some new faces will be found sitting around the conference tables.

It has been rumored, and openly charged in some quarters, that an open break between the Citrus Commission and the Florida Citrus Mutual is pending, now that the stabilizing influence of the late Dodge Taylor is no longer to be exercised. It is devoutly to be hoped that this rumor never gets beyond the whispering stage. The Florida citrus industry needs both of these great organizations — and needs them working in harmony. Any disruption of harmonious co-operation of the two organizations is bound to react to the disinterest of Florida citrus growers.

Over a period of many years the Florida Citrus Commission has operated to protect the interests of the industry. Since its organization it has numbered among its members some of

the leaders in every phase of the industry, men who have given freely of their time to stabilize and advance every branch of the industry. Primarily concerned with the enforcement of citrus laws and regulations, coupled with sales promotion, the Commission has taken on the added burden of technical research and study of consumer demands. The Florida citrus grower certainly cannot afford to do without the Florida Citrus Commission.

While but a year old, Florida Citrus Mutual has fully demonstrated its worth to the industry. Conceived by some of the brightest minds in the industry, it has done more towards bringing about harmony among divergent interests than had ever been accomplished before. Seemingly doing the impossible, it has brought together in one body more than ninety percent of the citrus tonnage of the state, has united warring factions; has stepped into the marketing picture when its services were needed; has shown Florida citrus growers what a really united force can do when operating co-operatively. Florida citrus growers certainly stand in need of Florida Citrus Mutual.

It is unthinkable that these two great agencies should work at cross purposes. It is unthinkable that the great minds controlling both these agencies should permit personal jealousies or local rivalries to disrupt the friendly co-operation which has existed during the past year. It is to be hoped that the rumored conflict of interests between the two bodies does not get beyond the rumor stage.

## DODGE TAYLOR

In the recent death of Dodge Taylor at his home in Howey-in-the-Hills, the citrus industry of Florida loses an outstanding and aggressive leader. As chairman of the Florida Citrus Commission for the past year, he did much toward reconciling conflicting interests within the industry, while never compromising his own well known convictions.

As a leader in formulation of the existing citrus code, and its most earnest and aggressive defender, he retained the respect of those who honestly differed with him on many of the provisions of the code.

## "BIG MONEY" IN THE CITRUS PICTURE

Some growers have expressed concern over the investment by "Big Money" in Florida citrus groves and citrus packing, canning and concentrate plants. Fear has been expressed that the investment of huge sums by outside interests may operate against the interests of the small growers.

Well, like most other things, there are two sides to the picture. It is probably true that the big interests will have little concern for the welfare of the "little fellow." On the other hand, "Big Money" would not be investing in the citrus field if it were not for the belief that there is a profit in it. While "Big Money" is raking in the profits from its investment, there should be a little money left over for the small grower — if he produces the kind of fruit the market demands and markets it intelligently and cooperatively.

## FLORIDA SOUTHERN COLLEGE ADDS BIO- CHEMICAL INSTRUCTOR

Dr. Walter H. Eddy, internationally known bio-chemist and nutritionist, has joined the staff of the Florida Southern College bio-research laboratory, it was announced by President Ludd M. Spivey.

Dr. Eddy, emeritus professor of physiological chemistry, Teachers College, Columbia University, is one of the pioneers in the vitamin field and has greatly contributed to the initial promotion of the health angle in the consumption of citrus fruit. He initiated the use of citrus wastes for animal feeding.

While professor at Columbia University, Dr. Eddy was for 15 years the director of the bureau of food and health, Good Housekeeping Magazine, and it was on his approval that numerous food products received the seal of this important organization. Through this activity he became a leading figure in the field of nutrition and an advisor to numerous nationally known food concerns.

During the war Dr. Eddy was appointed as chief of food and nutrition, United States Army and was instrumental during World War II in obtaining for the Florida citrus industry large orders from the army.

He is the author of numerous text books on vitamins and nutrition, among them the best known is "Vitaminology", published in 1949, which serves as a source of information for many investigators in this field.

Dr. Eddy will teach a course in vitaminology, the science of vitamins, at Florida Southern, and, as a pioneer in citrus science will take an active part in the citrus department. Appointed as associate director of research, he will cooperate with Dr. Boris Sokoloff, director of research, on various food and nutritional projects which are at present underway at the college. He will remain as consultant to the American Chlorophyll Company of Lake Worth and to other national concerns.

Dr. Leo Streitzov, noted French-Russian chemist, also has joined the staff of the Florida Southern college bio-research laboratory.

Dr. Streitzov, who received his doctor of philosophy degree at the University of Toulouse, France, was

formerly in charge of the British Wood distillation plant in Bosnia and was president of the largest enzyme-producing plant in southern Europe.

He has had 20 years experience in chemical engineering and pharmaceutic production and will be in charge of various by-products projects now underway at the research department of the college.

Appointed as associate chemist, Dr. Streitzov will work under the direction of Dr. Boris Sokoloff, director of research.

## CALL FOR ANNUAL MEETING

President R. D. Keene has issued a call for the Twenty-seventh Annual meeting of the Growers and Shippers League of Florida to be held at the Chamber of Commerce Dining Room, in Orlando, Friday, June 16, 6:30 P. M. The Annual Meeting will be preceded by a very nice dinner and all are urged to send in advice as to who will attend from each company at the earliest possible date. A program of interest will be arranged.



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- SEEDS
- FERTILIZERS
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# Observations On Citrus In Italy . . .

Italy and Sicily lie between 36° and 47° degree north latitudes, corresponding to the latitudes of Raleigh, N. C., and the northern border of Maine in our country. It seems a little strange that citrus trees grow and mature fruits so far north, but the climate is warmer than the latitudes indicate, due to the warm waters of the Mediterranean and the Alps and Dolomite Mountains that serve as barriers to the cold north winds. The climate is quite subtropical in Sicily and also on the mainland as far north as Rome. Commercial citrus plantings are numerous in Sicily and in the southern half of the mainland, but home garden and estate plantings of citrus may be found anywhere, even within sight of the Alps.

Both Italy and Sicily are very mountainous and rugged in topography. The mountains are dry, bare, and brown in the summer, and snowcapped in the winter. Two thousand years of sheep-grazing have caused loss of soil and vegetation, except for scrub growth. The foothills and river valleys between mountain ranges now have this soil and are rich and productive. These valleys, a few high plateaus, the narrow coastal plains, and the reclaimed swamplands are just barely sufficient in extent to support the 45 million Italians.

The best and richest lands cannot be given to citrus, because every square meter of land suitable for growing grain must be planted to wheat, corn, oats, rice, or other cereal. Bread comes first. Vegetable crops get the next choice of land. Fruits come third, and must occupy stony fields, steep slopes, or even man-made terraces. And citrus must compete for land with olives, grapes, apricots, filberts, and almonds, and, in the north, with apples, pears, and peaches. Even so, there is a large annual production of citrus fruits. It ran 752,000 metric tons of 2,205 pounds each, prewar. This is about 18 million Florida boxes.

<sup>1</sup> From 1943 to 1946 with Allied Military Government in Sicily and Italy on military furlough from the U. S. Department of Agriculture.

HERBERT SPENCER  
USDA BUREAU OF ENTOMOLOGY  
AND PLANT QUARANTINE,  
FORT PIERCE

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Horticultural Soc. for 1948: 61:  
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Most of the fruit is consumed in Italy, but a sizable fraction gets into world commerce. We used to import lemons from Sicily, but now the exports go north by train. Locally consumed fruit is sold on road stands or is carried into the large cities in fruit carts decorated lavishly with Biblical paintings and carvings, or in the more modern auto trucks. In the towns fruit stores display the fruit in open trays exposed to the sun, rain, dust, and flies, and sell it by the kilogram or fractional weights of a kilo.

I spent 7 months in the eastern provinces of Sicily, the largest citrus growing area. The plantings were in the rich valley west of Siracusa, around the large valley of the Catania River, around the base of Mt. Etna, in the north-eastern province of Messina and around Palermo in the west. Orange and lemon trees were there, but no grapefruit. In September of 1943, just after the invasion, everything was in confusion. Many people had fled from their city or farm homes and were living in caves up on the mountains. No civilian vehicles were allowed at first to use the roads, and food in the towns soon ran out. Grain was ready to harvest and fruit picking time approached. After the bombings ceased, people walked back to their homes.

Fruit growers faced many problems. Many farm animals and much farm machinery had disappeared. Roads were almost impassable because bridges had been blown up. Railroads had been damaged beyond immediate repair. Fertilizers and insecticides had been scarce for a long time. There were no boxes for packing fruit. All bank balances had been

"frozen" by military orders. In a part of Siracusa that had escaped the bombs we found three woodworking shops that ordinarily made the citrus boxes. Usually competitors, they were eager to pool their resources and start to work. They thought they could make 6,000 boxes with the wood and nails on hand, but they had to have a permit to throw the electric power switch on, and a permit to draw out funds from the bank so they could pay the workers. Money was necessary for them to buy bread.

The box assembled there as a sample was very much like the California box. The wood was clean, white, and smooth, neatly nailed, and the box compared very favorably with ours. One difference was that metal strapping was not used. A flexible wood half-round rattan-like strip substituted for the metal.

There were some groves in eastern Sicily that were planted in blocks, as we do, but more were in small, irregular plots and were planted in contours, on steep terraced, rocky hillsides. Young groves were uniform in growth, but in older plantings the trees showed much variation in size and shape. They were healthy, the foliage being dark green, with no signs of any deficiencies. Many groves had facilities for furrow irrigation. There were a few purple scales and Glover scales, but there was no trace of rust mites or russetting. The scales are controlled there by fumigating occasionally under marked tents with hydrogen cyanide. This was generated by the old "pot" method, using sodium cyanide eggs and crocks of diluted sulfuric acid. In Catania there was a firm that specialized in grove, warehouse, and ship fumigation. The discoid method of application of hydrogen cyanide was known to these workers, as well as the older pot method.

In these groves much use was made of barnyard manure and dried sewage sludge. Most of the sources of commercial fertilizer had been cut off by the war, but the Italians

June, 1950

## THE CITRUS INDUSTRY

Thirteen

do not depend on it as much as we do. The soil base was rich in minerals, from limestone and volcanic sources, and not like our washed-over sands.

The fruit quality was excellent. The Sicilian variety names meant nothing to us, or to other Italians, but there was a blood orange and one somewhat like the pineapple variety that were welcome additions to Christmas dinner. Both boxes that we bought had fruit nicely washed, graded, and packed. Tissue paper wraps were used, and were printed in color with the brand name, "Micky Maus." Many attempts were made by individual British officers and men to mail packages of these oranges home, where they were badly needed, but the speed of ships in convoy was too slow and the oranges rotted in transit. Lemon shipments got there all right. Later on, a British civilian group came to establish commercial shipments to England.

In April 1944 I was moved to the Naples area on the mainland, and spent 11 months there and near Rome. The Naples area, from Salerno to Sorrento and north as far as Terracina, on the coast, and inland around Pompeii, had many citrus plantings. Besides oranges and lemons, there were tangerines, which the Italians called "mandarina." All were excellent in quality. Scale insects were present, but not in damaging numbers. I was told that an outbreak of a red mite similar to our "purple mite" followed the eruption of Mt. Vesuvius, which left fine volcanic ash on leaves and trees and everything else. Incidentally, these deposits of volcanic ash added to the soil every few years keep it rich in mineral elements. Irrigation is used in the groves of this area, too. One grove and an adjoining vegetable field had a well with a chain bucket pump, run by a patient mule walking around and around, guided by a long pole. The gears and sprockets in this pump were made of wood.

At Sorrento there was a grove between the coast road and the water with an extensive scaffolding of poles through and over it. Here and there, on top of the scaffolding, were piles of woven straw mats, ready to be spread to protect the trees from frost. There were many shade trees in this grove, and these also may have given some protection to the citrus

trees below them. This grove was an exception, as most of the other groves seen below Rome had no such protection.

In north Italy there were plantings on the coast northwest and southeast of Genova and there was a fine grove in the grounds of the palace of the Kings of Lombardia, near Milano. It was protected by high walls of stone and by a building on the west of it.

On the military maps of north Italy there is a town named "Limone," midway north on the west side of Lake Garda. Since the word means "lemons," I suspected that there might be citrus there, and drove up. I couldn't see how citrus could grow there, almost within the Alps, as the latitude of the place corresponds to that of Bangor, Maine, but I found about a dozen large groves on the steep shores of the lake. Each was completely surrounded by high masonry walls, had a two-story residence and service house, and was roofed over with a series of heavy iron pipes and poles supported by concrete posts. Evidently in cold weather tarpaulins

are used to cover the groves. The German army had fancied the tarpaulins, or else the owners had hidden them to save them. They were gone. The trees had fruit on them, but were in need of a good fumigation to get rid of the scales. If one considers cost of these installations, the fruit must have been almost "gold plated" when picked. But it is evidence that Italians really love and appreciate their citrus fruit and will have them even at high cost.

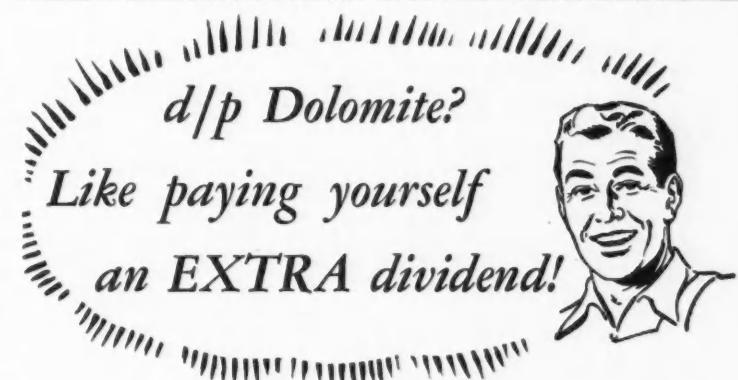
## R. J. WILMOT, STATION

## HORTICULTURIST, DIES

In the passing of Royal James Wilmot, Florida lost one of its outstanding horticulturists. Mr. Wilmot, 52, died in a Gainesville hospital on May 7 after a brief illness.

He had been a member of the horticulture staff of the University of Florida Agricultural Experiment Station in Gainesville for 17 years, assuming his duties with the Station in 1933 after being associated with the State Plant Board for six years.

He did research on numerous ornamentals and was recognized as a national authority on camellias.



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# The LYONIZER

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## Reports Of Our Field Men . . .

### HILLSBOROUGH & PINELLAS COUNTIES

C. C. (Charlie) Little

Trees in this section started blooming in January and they are still blooming. How much of it will stick is anybody's guess.

We have had and are still having the heaviest leaf droppage I have ever seen. There are several reasons, chief among which are the heavy infestation of red spider, a continuation of the drouth and the fact that many trees have not been dormant for the past two or three years and are apparently tired. The mealy bug is also causing a lot of damage at this time.

There are still a lot of Valencias and late bloom grapefruit in this section, but most houses are working hard and should have them cleaned up shortly.

Good progress is being made in the summer application of fertilizer.

### POLK COUNTY

J. M. (Jim) Sample

While some showers came to this area in the middle of May the first half of the month was dry and hot. Water levels are low in the lakes and the rainy season can't start too soon from the grower's viewpoint.

Rust mites are being controlled with sulphur, and Parathion is being added for scale control. Purple scale is building up and some evidence of Red Spiders is noted following Parathion application.

A great deal of lead arsenate is being used on grapefruit this year, but the grapefruit crop generally consists of several blooms and a uniform early bloom is the exception. Most growers are reporting a heavier grapefruit crop than was reported last month, but the seeded varieties are still spotted, with many unirrigated groves showing only scattered crops. Mid-season oranges are also reported as lighter than last year.

The summer fertilizer application is nearly finished and tonnage applied was substantially greater than last summer. The Valencia crop is being cleaned up and very few groves are picking as heavy as last year.

### WEST CENTRAL FLORIDA

E. A. (Mac) McCartney

There are going to be four or

five different sizes of fruit again this next season due to the different bloom. Some trees are still blooming with fruit set as large as golf balls.

There has been some rain in this section which has helped a lot. I have never seen as many leaves under the trees due to six-spotted mite and red spider. Hot dry weather has contributed to leaf dropping also.

The vegetable deal has not brought a fair return to the grower with the exception of cukes and tomatoes. Eggplant, corn and squash were hardly bringing production costs last week on the Plant City market. Webster is moving cukes and tomatoes in good volume.

Citrus growers are going ahead with the summer application of fertilizer and by all indications it will be heavy. As usual when it rains at this time of the year everyone wants delivery at once. However, we will be able to take care of them all as we now have enough trucks to handle most any situation.

### SOUTHWEST FLORIDA

Eaves Allison

Our regular spring drouth is plaguing the citrus grower and favoring the truck farmer with his controlled irrigation at harvest time. However, it looks like a good rain would benefit all at this time.

There is considerable drop showing up on the new citrus crop, caused by dry weather. This is usually the case causing many growers to think that their trees will have nothing left. But there will probably be a good crop remaining, again as usual.

It is too early yet to determine the extent of the grapefruit crop. The fruit cannot be seen well enough until it sizes up some more.

The spring vegetable deal is in heavy harvest now, with prices holding up well. Gladioli season is about over and prices generally have been satisfactory. Those Valencia growers who turned down three dollars for their fruit have another example of hind sight being better than foresight.

### NORTH CENTRAL FLORIDA

V. E. (Val) Bourland

All irrigation equipment has

been in use for quite awhile. Groves have been blooming since Jan. 15, some have a good crop of early bloom, others have very good crop second bloom, and still others have some tiny fruit. It is hard to tell how much of the fruit from last bloom will stick. Most tangerine trees have a good crop of fruit, some grapefruit groves have very small crop, more especially where late grapefruit stayed on trees, other blocks where fruit was moved early have a very good crop.

Most of the growers have had their groves sprayed and trees are looking very good except for dry weather. Quite a volume of Valencias are left, and of good quality, also quite a lot of grapefruit that haven't reached the maturity test.

It has been most too dry for melons, some growers have been irrigating and late plantings are looking very good. Early ones that was left from cold are maturing, but running small.

### SOUTH POLK, HARDEE AND HIGHLANDS COUNTIES

R. L. (Bob) Padgett

Recent rains have given relief at last to a record spring drought. Many groves have been irrigated four or five times since February 15. There has been some very encouraging talk in Highlands County about maintaining high lake levels in the future by controlled outlets of the larger lakes.

Scale control has now taken the attention of the grower. Considerable Parathion was used in this area this spring, particularly among the large grove owners. Oil sprays will again be popular in this territory.

It looks as if a heavy crop of grapefruit has been set. This year there have been more acres of grapefruit arsenated in this territory than in previous years. The orange crop is a little small to tell just what we have yet, but it is certain that mid-season varieties will be light this harvest.

The summer application of fertilizer is now in full swing.

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We believe it is this active and lasting interest of this firm in all of its customers which has been responsible for the extraordinarily long tenure of relationship we enjoy with those who purchase their fertilizer from us . . . coupled with the fact that Lyons Fertilizers Produce Maximum Crops of Finest Quality.

Lyons Fertilizer Company  
Tampa, Florida

**PLANNING SPRAY PROGRAM  
FOR THE SUMMER OF 1950**  
(Continued from page 6)

applied during July than when they were applied during June. This is due to the fact that there is a shorter interval between the time of application and the advent of cool weather. Thus, the scales have a shorter interval of time in which to reinfest the trees. Therefore, under normal circumstances, it will be more desirable to withhold spray operations until the first two weeks in July.

Where oil is to be used, July sprays should be applied prior to July 20. Oil sprays applied after that date are apt to have detrimental effects both on fruit color and on total soluble solids. This is not true in the case of parathion and parathion sprays may be applied at any time during the summer or fall months from these standpoints. Therefore, if it is felt to be desirable to wait until August for the application of parathion for scale control, it will be perfectly satisfactory from all standpoints. It should be emphasized, however, that the growers should not wait until such time as heavy scale infestations have built up in his grove. Scale is always harder to control when large numbers are present and either oil or parathion should be applied before a heavy infestation has been acquired.

**Alternatives on Spray Programs**

Several different spray programs for scale control may be employed. The most common one will be to apply either one oil or one parathion during June or July. This program will apply to most groves in the State and should be used where scale infestations are present in normal or moderate amounts.

Where scales are present as heavy infestations in the beginning of the summer of 1950 it is probable that two sprays will be necessary to get satisfactory control. Either oil or parathion may be used in the summer application and either of these sprays may be followed with an application of parathion during fall of the year. If parathion is to be used where heavy infestations are present, it should be used at the rate of at least 8 pounds of a 15% material per 500 gallon tank in June. A lower dosage than this is very apt not to give satisfactory control of

heavy infestation. It is possible that the later application in the fall of the year may be applied at 1 pound per 100 gallons, but that factor will have to be determined at the time of the second application. If two sprays are necessary, it is desirable that the fall application be made with parathion rather than oil.

Many growers have already applied parathion at the rate of 1 pound per 100 gallons during the post-bloom spray operation. In most cases where this has been done, 1 pound of parathion per 100 gallons will be satisfactory as a summer spray application, and this spray may be timed to coincide with the time when rust mite control is needed. However, where scales have increased in considerable numbers in spite of the earlier parathion application, the dosage should be increased to at least 8 pounds per 500 gallon tank.

**Mealybugs**

Mealybugs have been observed in large numbers in some groves. The groves which have been pointed out to us have generally been Valencia oranges. However, other varieties, especially grapefruit, may be affected and it would be well to check groves at this time of the year in order to ascertain if mealybugs are present in dangerous numbers. Mealybugs are apt to continue to build up during June and July. If control is to be effective, the sprays should be applied as soon as possible. Parathion is the only effective means of mealybug control which we possess at the present time. For mealybugs it should be applied at the rate of at least 8 pounds per 500 gallon tank. This is a minimum dosage and when it is used, extreme care should be taken to thoroughly wet the trunk, leaves, and fruit. Scale control will be accomplished at the same time and this spray will serve the dual purpose of controlling both scale insects and mealybugs.

**Rust Mites**

This is the season of the year when rust mites often build up rapidly and in large numbers. Therefore, it is essential that the groves be checked and preparations made to apply sulfur if necessary. Rust mites often complicate the scale control picture at this season. Where parathion is to be used, sulfur should be combined with parathion and rust mite control will be accomplished at the same time as scale control. Other factors being

equal, the parathion-sulfur spray should be timed to be applied when rust mite control becomes necessary.

If oil sprays are to be used for scale control, rust mite control may be more difficult. In general, oil sprays and sulfur applications should be separated by at least two to three weeks. Sulfur dust may be a satisfactory method for temporarily holding down rust mite infestations and then oil may be applied later or this process may be reversed. In general, less injury is apt to result if oil is followed by sulfur than if sulfur is followed by oil. In other words, oil applied on top of sulfur is more apt to cause burn than the reverse situation where sulfur residues are applied on top of an oil spray. This is caused partly by the fact that sulfur tends to stay on the trees over a longer period of time than oil and is more apt to be present when the second spray is applied. In addition, oil on top of sulfur seems to cause a deeper penetration into the peel of the fruit. Therefore, it is suggested that where possible oil sprays should be applied first and then followed with a sulfur dust as soon as rust mites make a reappearance.

For more specific information, call the Citrus Experiment Station at Ft. Pierce or Lake Alfred.

**HICKS SUCCEEDS WOODS**

Wallace B. Hicks, of Jacksonville, has been elected to succeed J. Albert Woods as president of the Wilson & Toomer Fertilizer Company, one of Florida's oldest and largest firms, it has been announced.

The company's Board of Directors also reported that Woods, who on July 1 will assume his new duties as president of Commercial Solvents Corporation, New York, will continue to serve as a director of the fertilizer company.

Hicks, whose election automatically makes him head of the Florida Agricultural Supply Company, a division of Wilson & Toomer which manufactures insecticides, has been a vice president of the company since 1946.

A native of Villa Rica, Carroll County, Georgia, Hicks has virtually made a lifetime career in the industry, starting as a control clerk with a nationally known fertilizer company in Atlanta and becoming superintendent of that company's Atlanta plants. He served fifteen years with this company.

## USDA REPORTS RESULTS OF PILOT STUDY ON CITRUS PREFERENCES

A research report on citrus preferences of household consumers in Louisville and in Nelson County, Kentucky, has been issued by the U. S. Department of Agriculture. In the areas covered, some kind of citrus product was found to have been used in 99 percent of the households, both urban and rural. The most popular fresh items were oranges and lemons, and the most popular canned product was orange juice. The survey was made between June 11 and 30, 1948.

Half of the homemakers interviewed apparently were getting all the citrus products they wanted or thought they needed. Of those who were not getting all they would like to use, 2 out of 3 said they would use more if the products were less expensive. About half of the homemakers interviewed said they were serving the same quantity of citrus as before the war. The 91-page report (AIB No. 2), prepared in the Bureau of Agricultural Economics, gives the findings of a survey, or pilot study, covering a selected urban and a rural area. The survey was conducted by the BAE and was financed with Research and Marketing Act funds.

Income or education levels appeared to have little or no relation to the use of specific citrus products used in Louisville. But in rural Nelson County relatively more households in the higher income and educated groups used the various citrus products, and used them oftener, than did the low-income and poorly educated groups. And in Nelson County individuals in the large families generally got less citrus than did members of the smaller families.

Families with children tended to use more fresh oranges than other families, and less grapefruit, fresh or canned. In the rural area studied, however, the greater use of fresh oranges was limited to families with children under 6 years of age.

Taste was found to be the main factor in determining the use or non-use of any citrus product, although other factors entered in—such as health, habit, expense, and availability. Cost and lack of availability seemed to deter use of the products more in the rural than in the urban area.

A decided preference was found for fresh oranges and grapefruit that were offered loose, in a bin, though presacked oranges were more acceptable than were the bagged grapefruit. The loose fruit, housewives said, was of better quality, and the bags often contained some spoiled fruit or fruit of uneven quality and size. The wish to see what they were getting and to select the exact fruit wanted appeared to be a widespread shopping habit. Only a minority bought the presacked product, usually giving "economy" and "convenience" as their reasons.

Louisville users were using nearly

2 pounds (1.96 lbs.) of fresh oranges per capita a week during the survey compared with 1.17 pounds per capita by Nelson County users. Consumption of other citrus products were: fresh grapefruit in Louisville 1.61 pounds, in Nelson County 1.89 pounds, fresh lemons in Louisville 0.48 pounds, in Nelson County 0.46 pounds. In Louisville the consumption rate for orange juice and blends was the same, 16.6 ounces per person for the week; grapefruit juice, 15.12 ounces. In Nelson County the rate for orange juice was 18.59; blends 29.91; and grapefruit juice 14.05 ounces per week.

*Flash from Flag*

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DODGE TAYLOR

Chairman of the Florida Citrus Commission, who died recently at his home in Howey-in-the-Hills. Mr. Taylor long had held a prominent position in Florida citrus circles.

#### UNLOADING CHARGE— N. Y. - PHILADELPHIA

Interstate Commerce Commission examiners R. M. Brown and M. J. Walsh who heard the reopened I.C.C. proceedings (I. & S. 5500) concerning the assessment of unloading charges at New York and Philadelphia have issued a proposed report and find that the charges as approved by the Interstate Commerce Commission in a prior report should be rescinded as being unjust and unreasonable.

The examiners have sustained the fruit and vegetable industries' argument in their conclusions and findings, which in part are as follows:

**Conclusions and findings.**—The record establishes that the unloading by respondents of fresh fruits and vegetables at New York and Philadelphia is an expensive operation as shown by the cost computations adduced in evidence. The correctness or adequacy of these

computations is not specifically questioned by many of the protestants who take the position that regardless of costs respondents should receive compensation for unloading at these points, if at all, from the line-haul rates or through increased divisions.

"The burden of proving that the assailed charges are just and reasonable is upon respondents under the provisions of section 15 (7) of the Act. This burden has not been met. The Commission should find that the assailed unloading charges are unjust and unreasonable. In view of the foregoing conclusions no findings need be made under sections 2 and 3 of the Act.

"On rehearing the Commission should find that the charges assailed for unloading fresh fruits and vegetables, in carloads, at New York and Philadelphia are unjust and unreasonable, and that the findings in the prior report herein should be reversed. The

schedules naming the unloading charges assailed should be ordered canceled and the proceeding discontinued."

We hope the Interstate Commerce Commission will adopt the examiners' proposed report, but it will be several months before a decision is issued. Briefs are due on or before June 5th and will be followed by oral argument before the entire Commission.

#### CONTAINERS FOR FRESH FRUITS AND VEGETABLES

A description of the numerous types and sizes of containers commonly used for shipping fresh fruits and vegetables is provided in a new Farmers' Bulletin issued by the U. S. Department of Agriculture.

This illustrated publication is based on a study by the Fruit and Vegetable Branch of the Production and Marketing Administration under the Research and Marketing Act.

"The great diversity in sizes and types of containers used for shipping fresh fruits and vegetables is coming to be more generally realized," the bulletin says, "as search is made for possible ways of meeting the increasing costs of marketing these products and of improving the efficiency of the distributive processes."

#### Classified Ads

**CITRUS TREES** — Standard Commercial Varieties and Rootstocks. Information, Recommendations and Prices Furnished Upon Request. Clay Hill Nurseries Co., Box 2830, Tampa, Florida.

**CLEOPATRA MANDARIN** Seed and Seedlings, also contracting for budded trees on Cleopatra.

**RUBY RED GRAPEFRUIT** and all standard varieties on lemon and sour stock. Grand Island Nurseries, Eustis, Florida.

**IRRIGATION PUMPS**  
Diesel drive 1000GPM 280' head, mfg. by Allis-Chalmers with Hercules Engine 150HP. Ideal for long runs and lifts. Original cost \$8000.00, guaranteed ..... \$2250.00\*  
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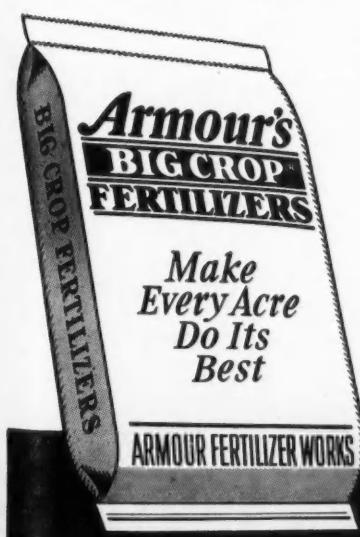
**GOOD USED STEEL PIPE**, new  
threads and couplings. All sizes.  
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Are your citrus trees in good condition — ready to produce smooth, high quality fruit that brings top prices? The answer is YES if they've been fed Armour's Big Crop Fertilizers regularly.

Wherever citrus grows, Armour's Big Crop Fertilizers are used with outstanding results, season after season. Growers know they can depend on Armour's to supply the right amounts of the essential plant food elements that producing trees need. Order a supply — make your next application Armour's.

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Norman Tuckett, Mount Dora  
Eaves Allison, Sarasota  
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Butler Feed Co., 409 13th St.,  
Leesburg  
Dowling Feed Store, 715 9th St.,  
Bradenton  
Taylor's Feed Store, Zephyrhills  
Farmers Supply Co., 810 So. Collins St.,  
Plant City  
Goding & Gilliam, Apopka  
R. F. Ragin, Sanford  
Harry Goldberg, Pompano  
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A. G. Macaulay, 1039 Central Ave.,  
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John W. Parker, Arcadia  
Raymond Graham, Zolfo Springs  
Sarasota Feed Co., 121 S. Lemon Ave.,  
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A. H. Schrader, San Antonio  
Thornton's Feed Store,  
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Sparks & Jordan Hardware Co.,  
5511 Nebraska Ave., Tampa  
Tampa Feed Co., 5904 Florida Ave.,  
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Tarpon Springs Feed Co., Tarpon Springs  
South Bay Growers, Inc., South Bay  
Unity Farms, Inc., Pahokee  
Wells Citrus Service & Supply Co.,  
Tavares  
G. E. Wetherington, Route 2, Box 478,  
Plant City  
John W. Barber, Jr., Webster